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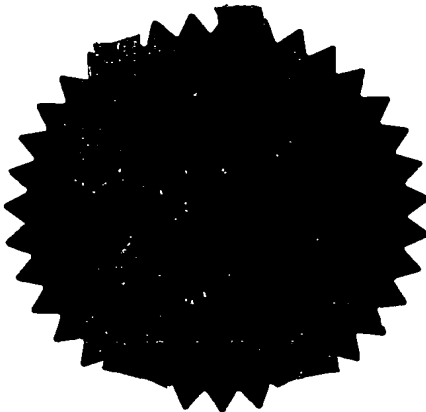
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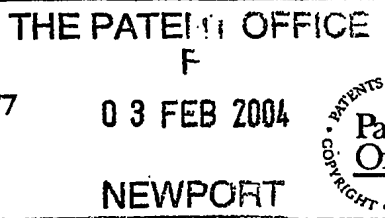
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Dated 8 March 2005



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1. Your reference

SCSS1

03FEB04 E870236-1 B20639  
01/7700 0.00-0402289.3 NONE

2. Patent application number

(The Patent Office will fill this part in)

0402289.3

3. Full name, address and postcode of the or of each applicant (underline all surnames)

DR KIN FAI KAM  
12 BLAKENEY PLACE  
YORK YO10 3HZ

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

2794968001

4. Title of the invention

SPECTACLE COMFORT SUPPORT SYSTEMS

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

AS ABOVE

Patents ADP number (if you know it)

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Country

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Date of filing  
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7. Divisionals, etc: Complete this section only if this application is a divisional application or resulted from an entitlement dispute (see note d)

Number of earlier UK application

Date of filing  
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8. Is a Patents Form 7/77 (Statement of inventorship and of right to grant of a patent) required in support of this request?

Answer YES if:

- a) any applicant named in part 3 is not an inventor, or
- b) there is an inventor who is not named as an applicant, or
- c) any named applicant is a corporate body.

Otherwise answer NO (See note d)

NO

Patents Form 1/77

9. Accompanying documents: A patent application must include a description of the invention. Not counting duplicates, please enter the number of pages of each item accompanying this form:

Continuation sheets of this form

0

Description

6

Claim(s)

0

Abstract

0

Drawing(s)

5 + 5

8

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for a preliminary examination and search (Patents Form 9/77)

Request for a substantive examination (Patents Form 10/77)

Any other documents (please specify)

11. I/We request the grant of a patent on the basis of this application.

Signature(s)

K. F. Kam

Date

2/2/04

12. Name, daytime telephone number and e-mail address, if any, of person to contact in the United Kingdom

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## **Spectacle Comfort Support Systems**

The invention relates to reducing discomfort for wearers of conventional spectacles and devices that use spectacle-like fitment.

Typically, a conventional spectacle frame rests on the nose, balances on the ears and anchors around the ears. Even if the perfect fitment is attained, prolonged wearing of spectacles leads to discomfort, as there is constant pressure on the nose, and to a lesser extent, pressure around the ears region. Discomfort due to nasal pressure can be particularly acute for wearer with heavy lens prescriptions or wearer of heavy optical devices that rely on spectacle frame type of fitment e.g. heavy goggles, headmount display and medical optical devices such as binocular loupe. The current common solutions are via the use of non-conventional spectacles with headband support, or headband support that can be used on conventional spectacles, which alleviate pressure around the ear area. Other solutions also include the use of special nose-guard, cheek-lifts, and even using adhesive tape to reduce pressures from the nasal and/or ear regions. For the average wearer of conventional spectacles and other conventional spectacle-fitting devices, the above solutions are inconvenient and/or cosmetically undesirable.

The object of the present invention is a cosmetically inconspicuous looking spectacle comfort support system which utilises either existing common headwear apparels or specially designed headwear. Pressures around the nose and/or ears can be minimised by providing lifting action on the temple arms of the spectacle via the use of a support system, which transfer some or all of the weight of the spectacle to the headwear. Using the present invention, wearer of conventional spectacles or other heavy spectacle-fitting device shall expect a significant reduction in discomfort as the weight pressures from the spectacle is reduced or entirely removed. Spectacle wearer with facial abnormalities may also benefit from using the present invention.

The generic form of the invention comprises: -

- a) A form of headwear e.g. baseball cap, visor cap, hats, headband, helmet.
- b) One or more support rod, or string. The rod or string may be of fixed or adjustable length. The upper part of the rod or string is attached to a), preferably to part of a) which protrudes beyond the circumference of the head e.g. the brim of a hat or cap. The attachment may be fitted permanently or detachably to a). The lower end of each rod or string has detachable means to attach to the temple arm of a spectacle.
- c) Means of securing the upper part of b) to a), with potential to adjust the vertical and/or lateral positions of the upper part of b).
- d) Detachable means of attaching the temple arms of the spectacle with the lower end of b). When the upper part of b) is adjusted and securely attached to a) as described in c) above, the invention will thus alleviate nasal and/or ear pressures by transferring the weight of the spectacle to the headwear. For example, in the case of using a support rod, the lower end of the rod could be of a hook-shaped design which can be used to support the temple arm of the spectacles. In the case of a supporting string, a powerful mini magnet may be attached to its lower end, which can then act to lift the temple arm of the spectacle if it has magnetically attractive elements within it e.g. containing ferromagnetic materials in the temple arms of the spectacle frame. If the temple arms of the spectacle do not already have magnetically attractive material within it, then it is possible to put an attachment containing magnetically attractive materials through each temple arm.
- e) There can be variations in the invention. For example, as an alternative supporting mechanism to d), the invention can be used by means of supporting the nose bridge of the spectacle using the lower end of b). Also, transferable versions of the spectacle comfort support systems is also proposed below, which allows it to be used on different headwears. Furthermore, it is also proposed that spectacles may be designed specially to include magnetically attractive elements built within its frame (e.g. in part of the temple arms or nose bridge of the frame), such that it can be used with the magnetic supporting

mechanism described in d) above, without the use of magnetic attractive attachments.

The invention and several variants will now be described solely by way of example and with reference to the accompanying drawings in which:

FIGURE 1 shows a spectacle user wearing a headwear, with two length adjustable support rods, acting to reduce nasal pressure.

FIGURE 2 shows a cap with a headwear-support rod attachment system, which allows height and lateral adjustments of the support rod.

FIGURE 3 shows a cap-support rod attachment system using a spring-loaded stopper.

FIGURE 4 as Figure 1, except the support rod are replaced by a string-magnet support system and the spectacle wearer is not shown.

FIGURE 5 shows a transferable version of the spectacle comfort support system, and its application demonstrated on a cap.

FIGURE 6 shows a different application of the spectacle support system, with the support rod acting on the nose bridge of the spectacle.

Figure 1 shows a spectacle wearer using an example of the present invention which comprises a headwear with a brim 1, with two length adjustable support rods 2, each attached independently to the brim of the cap with some flexibility to rotate about the vertical axis direction as indicated by the arrow 3. The headwear-rod attachment method may be permanent or detachable (e.g. by means of using clips, pins, stoppers, or Velcro or some other standard methods. A novel method is described in figure 2 below) The lower end of the rod is shaped in a partial hook-shaped form 4, so as to enable each temple arm 5 of the spectacle, to rest stably on each rod, thus reducing nasal pressure once the length of each rod is adjusted accordingly. The use of a partial hook shape design rather than a fuller hook design is so that it only lightly secures the temple arm of the spectacle, thus allowing quick and easy engagement or

disengagement of the support rods 2 with the spectacle. The positions of the attachments as shown are such that nasal pressure is most effectively minimised or eliminated totally. It is also possible to reduce the pressures on the ear, if the attachment is situated nearer to the ear, such that the support rod can support the temple arm nearer to the ear.

In general, the support rod can be made of any solid materials as desired, including non-rigid material such as rubber. The lower end of the support rod may also be malleable to further enhance fitment with different temple arm types of different spectacle frames. For cosmetic appeal, the support rod may be clear or transparent, or in any colour that one prefers.

Figure 2 shows an example of how a support rod 2 of fixed or adjustable length can be attached to the headwear. The brim 1 of the headwear has embedded within it, a circularly shaped rubber inserts 6 with thorough cuts made within it (hereafter this insert will be referred to as a compressed holder). The support rod is then simply inserted through the cuts and its position remains fixed within it due to the compression of the rubber or similar materials that offer natural compression tension. In figure 2, the cuts made in the compressed holder 6, are made in the shape of a cross. The compressed holder design allows free vertical adjustment of the support rod, as well as limited lateral adjustments depending on the desired size and shape of the compressed holder and its cuts. If desired, a stopper may also be inserted through the upper part of the rod, on the upper side of the brim to completely secure the support rod from slipping downward. An example of a stopper being used is shown in figure 3.

Figure 3 shows a spring-loaded stopper (7A, 7B) is used to fix the support rod to the brim 1 of the headwear. For clarity, only one-rod support system is shown. The stopper is securely attached to the brim 1, with the support rod 2 passing through the case of the stopper 7A and so that the vertical position of the support rod can be vary easily by depressing the spring-loaded button part 7B of the stopper. The stopper may be used in conjunction with the compressed holder as discussed earlier for maximum stability, or use on its own as shown in figure 3, which allows for vertical adjustment only. Note the hole or gap made in the brim of the headwear is normally assumed to



be sufficiently flexible or large enough to allow some free movement of the support rod 2 relative to the vertical axis 3.

In general, the descriptions given for figures 1 to 3 above are also applicable, if the solid support rod is replaced by a supporting string system, consisting of a string 8 and a magnetic tip 9, as shown in figure 4. The lower end of the string is attached a small powerful magnet e.g. a disc neodymium based magnet. The use of this type of powerful magnet means that the magnet can be quite small for the purpose of lifting the weight of a spectacle. The string may be made of very thin but strong material, like nylon, so that beside the headwear, the support system is almost completely inconspicuous. The other advantage of using magnets as an attachment method to the spectacle frame is the ease of engaging or disengaging of the support system with the spectacle. In order for the string to act as a supporting system to the spectacle frame, it is necessary for the spectacle to contain magnetically attractive elements in the appropriate positions. This can be achieved in several ways: a) the spectacle may already have magnetic materials within its frame structure e.g. steel screws used in the hinges of the temple arms, or the temple arms structure may consist of ferromagnetic materials b) a specially designed spectacle frame which has magnetically attractive elements strategically located in the frame to work with the magnetic support system. This may be especially relevant for spectacle wearer with facial abnormalities where more than two support rods or stings are used to alleviate pressures from both the nasal and ear regions and c) using an additional magnetic attractive attachment that can be freely positioned to the temple arms 5 of the spectacle. A simple example is shown here in figure 4, which consists of an elasticised sleeve 10, which has, some magnetic attractive elements (e.g. ferromagnetic materials such as iron or steel) embedded within it. The advantage of this option is that it can be used on any spectacle. The double arrows 11 indicate the attractive forces between the magnetic elements 9 and 10.

The use of magnetic support method can also apply to the solid support rod system of figures 1 to 3. In this case, the tip of the support rod is made magnetic, thus there is no need to use a hook shaped tip, if the temple arms 5 are magnetically attractive e.g. by using magnetically attractive sleeve 10 as described above.

Figure 5 shows a transferable version of the spectacle support system that is not specific to a headwear that has been adopted to accept the support rod or string supporting system. Instead, a clip-on device is incorporated to the upper part of the support rod or string system as described earlier. The clip-on device essentially consists of a clip 12 with a built-in rod (or string) length adjustment system. Figure 5 shows a string-magnet support system with a spring loaded stopper 7A, 7B as the length adjustment system. The clip-on device therefore can be attached to any unmodified headwear where it can find an appropriate location for attachment i.e. onto the brim of a hat or cap.

Figure 6 shows a different application method of the present invention, whereby the supporting system is placed centrally in the brim of the headwear, such that now the support system acts on the nose bridge 13 of the spectacle. Also, a variation of the hook-shape tip is shown, whereby it now consists of two malleable hook-shaped ends 14, which brings extra adjustability to the design.

In the description so far, the headwear as shown has a protrusion (i.e. the brim of the hat), which is ideal for attaching the support rod or string for the purpose of this invention. For headwear that does not have any appropriate protrusion, it is quite simple to modify the above description by adding a protruding object in the attachment systems described above. The protruding object could then be attached to the headwear by the usual available means e.g. clips, pins, Velcro, sewing etc.

Furthermore, although one of the strength of the present invention is its adoptability with current existing headwear, it is also feasible to design bespoke headwear with the specific purpose of adopting it with the spectacle supporting systems described above. Such bespoke headwear may be made especially light weight and/or cool to the head (e.g. just having a minimum frame structure), or it can be adopted to give a wider support over both the nasal and ear regions i.e. built to adopt more than one support rod or string for each side of the temple arm of the spectacle.

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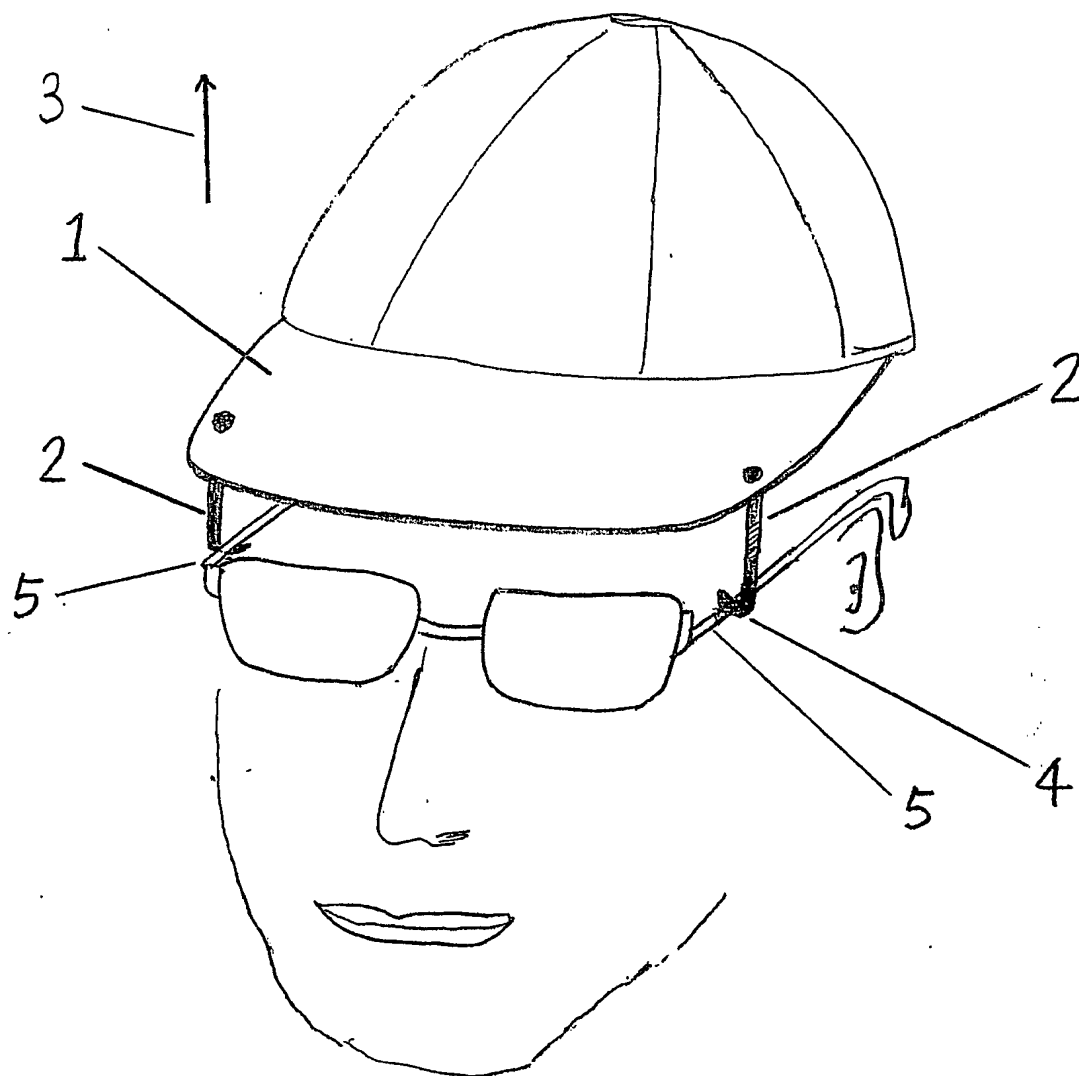


FIG. 1

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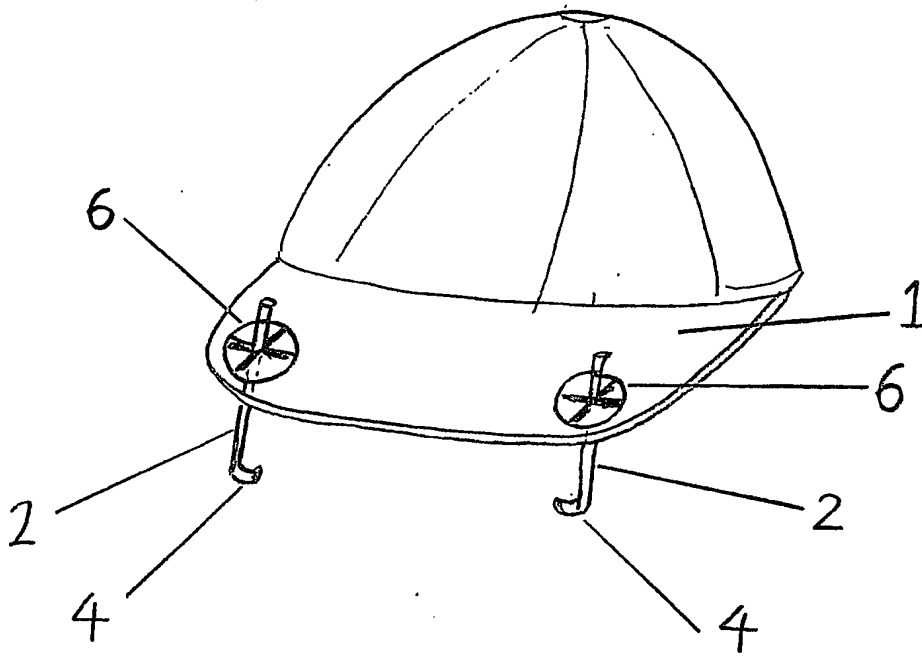


FIG. 2

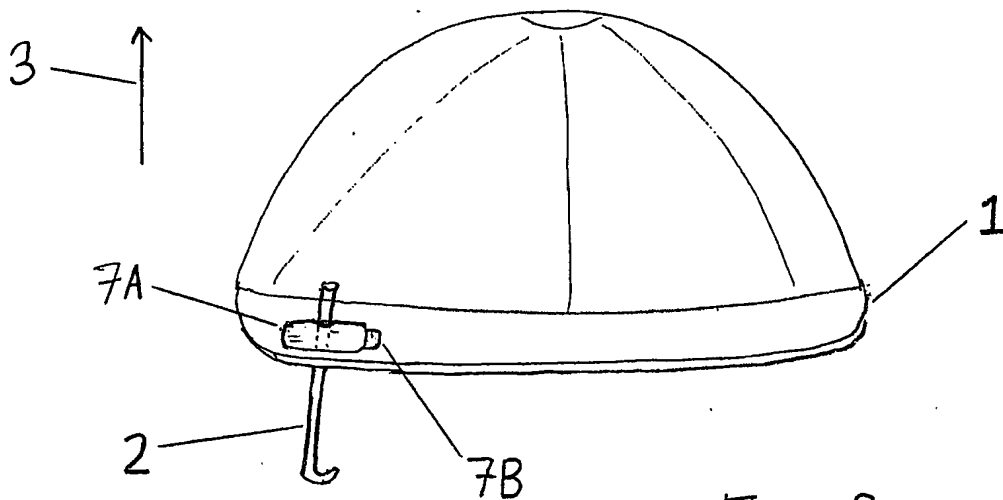


FIG. 3

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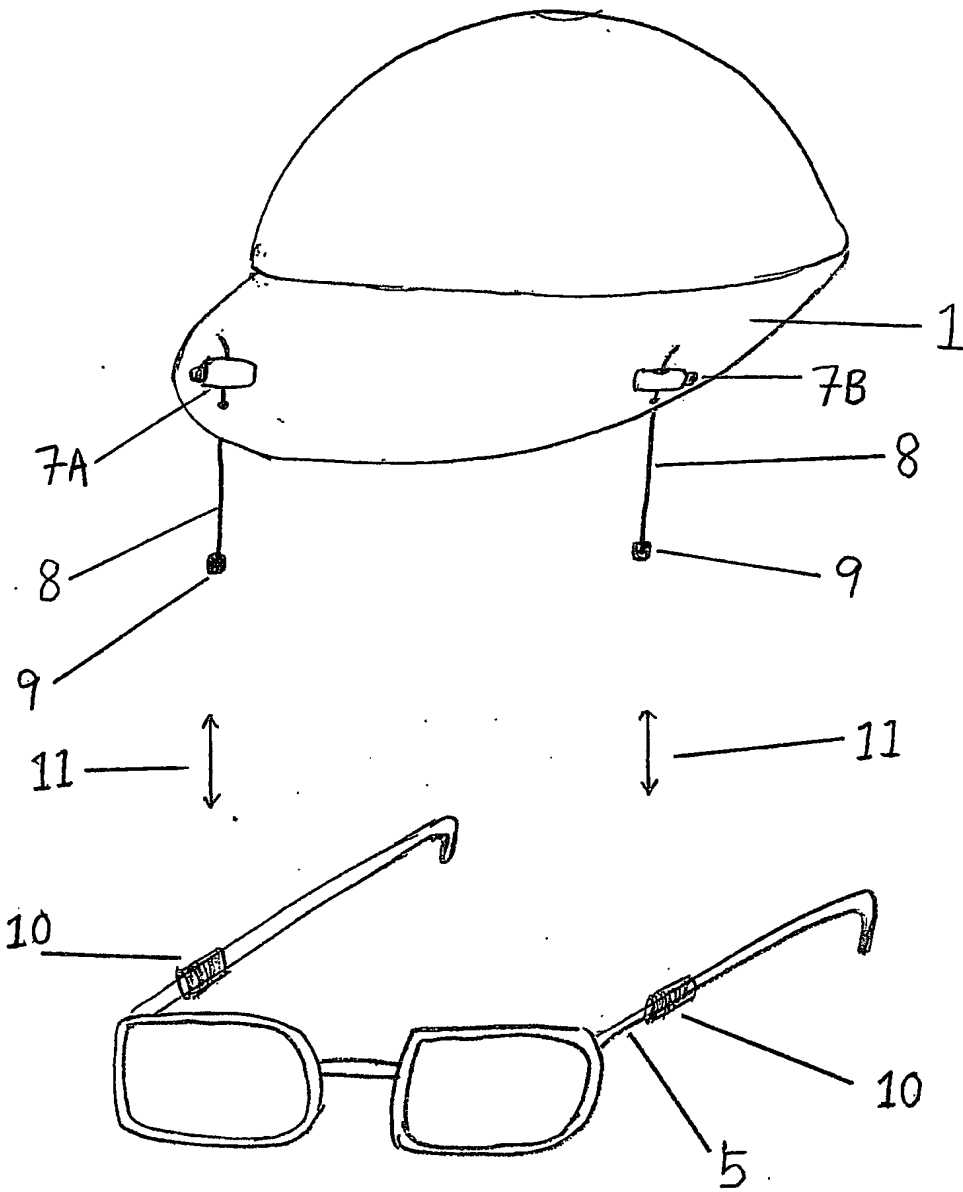


FIG.4

4/5

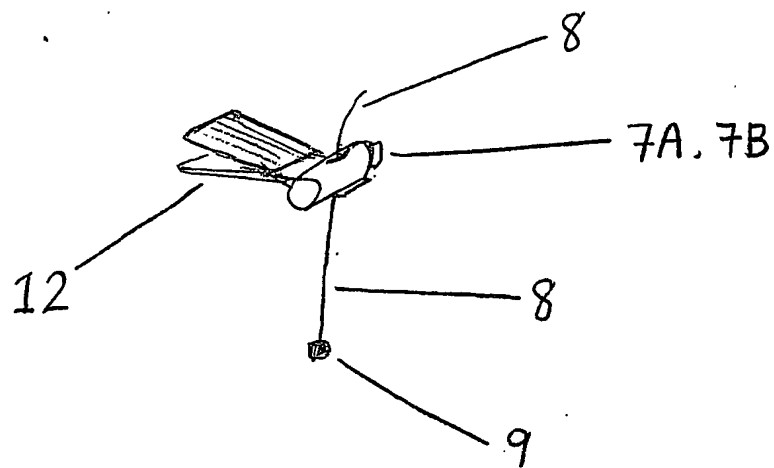
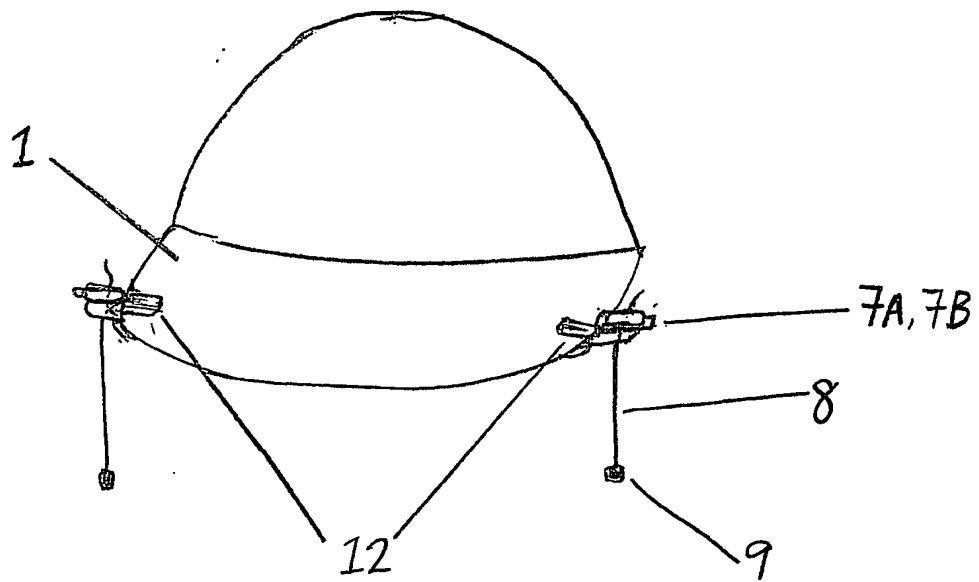


FIG. 5

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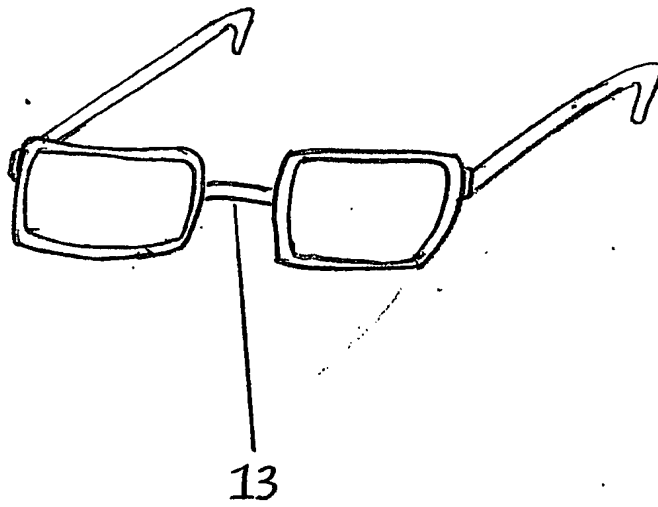
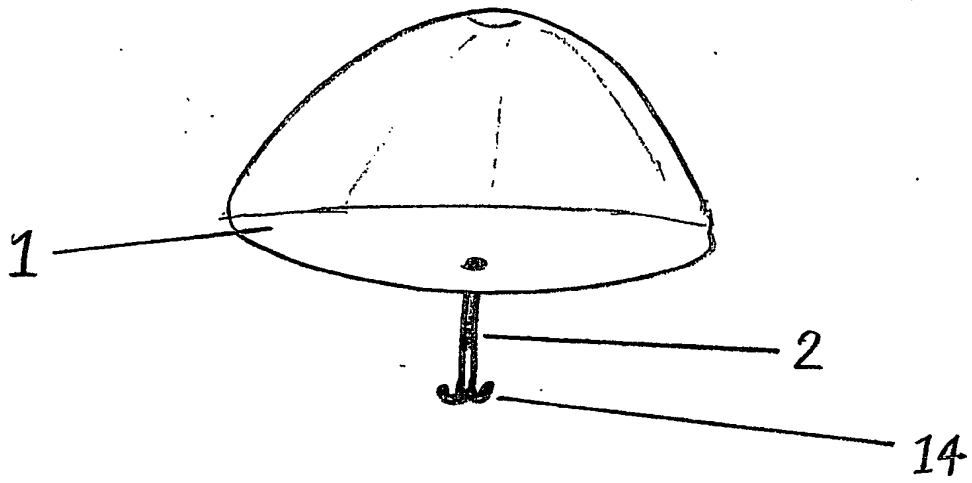


FIG. 6

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